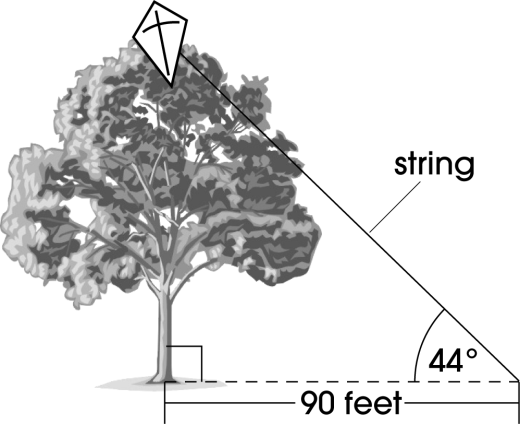
Breakout Session #2

Right Triangle Trigonometry

Another month has passed, and it’s time to sit down, eat some chocolate, and solve some math problems. Frankly, I don’t know how much trig that you’ll remember from earlier learning, so we might have to work a bit harder on these problems together. We’ll see. ☺

Multiple Choice

\_\_\_\_\_\_\_1. Del is flying a kite in his backyard. He drops his string holder, and the kite gets caught in the top of a tree, as indicated by the sketch below. If the string makes a angle with the ground, and the holder is 90 feet from the base of the tree. How tall is the tree? Round your answer to the nearest foot.



**A.** 63 feet **B.** 65 feet

**C.** 74 feet **D.** 87 feet

\_\_\_\_\_\_\_2. Which of the following statements is true about the cosine of an acute angle in a right triangle?

**A.** The cosine of the angle is hypotenuse over adjacent.

**B.** The cosine of the angle is adjacent over hypotenuse.

**C.** The cosine of the angle is hypotenuse over opposite.

**D.** The cosine of the angle is opposite over hypotenuse.

\_\_\_\_\_\_\_3. Use the formula to find the area of the triangle below. Round your answer to the nearest tenth.



**A.** 9.2 square meters **B.** 6.0 square meters

**C.** 8.0 square meters **D.** 12.1 square meters

\_\_\_\_\_\_\_4. For the figure below, use the Law of Cosines to find the length of *b.* Round your answer to the nearest tenth

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**A.** 102.2 **B.** 62.4

**C.** 132.9 **D.** 63.2

\_\_\_\_\_\_\_5. Find the value of x, the measure of the indicated acute angle, in the drawing below. Round your answer to the nearest tenth of a degree.



**A.**  **B.** 

**C.**  **D.** 

\_\_\_\_\_\_\_6. As indicated in the drawing below, a helicopter is hovering above a road at an altitude of 24 m. At a certain time, the distance between the helicopter and a car on the road is 45.0 m. Calculate the angle of elevation of the helicopter from the car. Round your answer to the nearest tenth of a degree.



**A.**  **B.** 

**C.**  **D.** 

\_\_\_\_\_\_\_7. As indicated in the drawing below, triangle XYZ is a right triangle, with a right angle at Y. . Find cos X, as a fraction.

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**A.**  **B.** 

**C.**  **D.** 

Free Response

1. Sean wishes to find the length of a pole, CD that is on the roof of a building, as indicated on the sketch below. The angles of elevation of C and D are 40° and 28°, respectively. The distance AB is 40.0 meters. Find the length of the pole. Show the steps of your solution.



2. Kevin is standing at the top of a ladder picking apples from an apple tree. The 7 meter long ladder is propped against the tree, and makes an angle of 70° with the ground. He tosses the apples into a basket located 5.4 meters from the base of the ladder, on the opposite side of the tree.

A. Determine the distance of the base of the ladder from the tree. Round your answer to the nearest tenth of a meter.

B. If Kevin looks down on the basket from the top of the ladder, what is the angle of depression? Give your answer to the nearest tenth of a degree.